distributed throughout the higher piedmont region of Georgia. During the spring of 1909, the writer captured two individuals at Thompson's Mills, North Georgia. One, a very small specimen, was found beneath some rocks in a dry, upland thicket, beneath which was a vigorous growth of *Opuntia opuntia*. The second specimen, which was of rather large size for the species, was dug from soft, rich soil in low ground bordering a small creek. The scarlet snake is very beautifully patterned above with scarlet, orange and black. It is a rather sluggish creature and is perfectly harmless, usually making little effort to escape when handled. Owing to its habit of keeping concealed beneath rocks, decayed logs or soil, this little snake is not frequently seen. Although the scarlet snake can not be considered a common species in this region, yet many of the farmers here claim they have met with them, usually during spring plowing. The scarlet snake probably occurs at higher altitudes in Georgia, though less frequently. It has been taken at Gainesville, Georgia.

Until the summer of 1893, when a specimen of this snake was taken in the District of Columbia, its range was recorded only from South Carolina, throughout the Gulf States to the Mississippi, mainly in the coastal plain area. Although it appears most abundant in the low, sandy coastal areas of the southeastern states, and has been considered typically an austroriparian form, it is without doubt also well represented in Georgia throughout the Carolinian area, and the limits of its range come very close to the mountains.

The copperhead (*Ancistrodon contortrix*) Linn. is occasionally taken in the Thompson's Mills region. This reptile is widely distributed throughout the east from New England to Florida and beyond the Appalachians to Illinois. In the Thompson's Mills region the copperhead is confined generally to more or less wooded, dry upland situations. It especially prefers dry, rocky hillsides. Its rich brown mottlings of various shades harmonize it well with the soil and dead leaves of thickets and open rocky woods, which it frequents. The food of the copperhead consists of various small creatures as frogs, mice, etc., and very probably caterpillars and insects also. At Thompson's Mills, in October, 1909, the writer saw a pair of large copperheads killed in a shallow ditch on a dry, wooded hillside. Both were lying stretched out together in the sunshine when killed. It was discovered that one of these had in its mouth a very large, hairy caterpillar frequently seen in oak woods.

The copperhead is one of our dangerously poisonous snakes, but will usually try to escape quietly if given a chance. It should be particularly looked for around rocky cliffs in dry woods, for this is its favorite habitat. The writer well remembers meeting a copperhead in this situation while collecting ferns. He had jumped down into a shallow, rock-enclosed hollow filled with leaves. There was a sudden commotion beneath his feet of some creature trying vigorously to escape, which at first thought he concluded must be a rabbit. On glancing down, it was something of a surprise to see a huge copperhead securely pinned down by his weight. It took but an instant to leap completely clear of snake and hollow, and the reptile slowly made its escape among the rocks.

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BUREAU OF PLANT INDUSTRY,
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ON CHANGES OF ATMOSPHERIC PRESSURE IN NORTH AMERICA

IN order to arrive at a clear understanding of the complex phenomena of periodic or non-periodic climatical changes—and the effect they have on the yield of crops—I found it necessary to approach these problems in a very systematic way.

It seemed to me that two kinds of investigations had to be made simultaneously.

Firstly, the research of the meteorological causes having affected the crops, during different years in different countries. In the case of the United States it would be easy to draw conclusions from the great amount of information collected and published by the de-

partment of agriculture, if this information were only coordinated according to the needs of such a research.

Secondly, to find and then to solve, one by one, the problems of dynamical climatology.

Working along this line and leaving aside, for the present, the continuation of my study on modes of formation and progressive displacements of the thermopleions and antipleions,[1] this study being extremely difficult, I found simpler and more fundamental phenomena by drawing maps of the annual departures of atmospheric pressure.

These maps led me indeed to most unexpected conclusions.

Considering the data of the tables of "barometric pressure" of Sir Norman Lockyer, and utilizing the departures given in Bigelow's report on atmospheric pressure, as well as those published in the annual summaries of the *Monthly Weather Review,* I drew curves showing the geographical distribution of equal departures.

I found that, with few exceptions, the areas of positive and negative departures displace themselves from east to west, from the Atlantic across America toward the Pacific. In reality, however, the movements of the areas of hypo- and hyper-pressure are very complicated, there being generally two distinct directions of propagation simultaneously apparent. Some maps show clearly the existence of intercrossing waves coming from beyond the northeast and southeast of the United States.

These waves are extraordinary because of their slow progress. To verify the fact that waves of hyper- and hypo-pressure of the map of a given year are really those of the preceding year displaced westward, I have calculated consecutive annual means.

The diagrams of these figures—for stations situated along the presumed path of a center of too low or too high annual pressure—show that it is really with a wave movement, of a particular kind, that we have to deal.

I shall not dwell on the details, this being but a preliminary notice of a paper which will be published in the *Bulletin of the American Geographical Society.* I must state, however, that my method of utilizing consecutive means, which makes it possible to draw yearly maps from month to month, will enable me to foresee the changes which will occur.

To know how far this method may be applied to forecast seasonal distribution of pressure, I must first investigate the yearly variations of pressure, and calculate the consecutive means of many series of observations, to find out if there is not a periodicity in the long-range atmospheric waves.

From the discussion of annual maps it appears most probable that the amplitudes of those waves increase and decrease in harmony with the sun-cycle of about eleven years.

Henryk Arctowski

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[1] Arctowski, "L'enchaînement des variations climatiques," Bruxelles, 1909.

COLLEGIATE INSTRUCTION

The Committee on College Instruction of Section L, of the American Association, recently ordered the publication, if practicable, of certain samples of the facts obtained in a study of (1) the size of classes (a "class" being defined as a group of students dependent upon one teacher for instruction in a course) and of (2) the actual work done by individual students in fulfilment of the requirements for the A.B. degree. By the courtesy of the editor of Science, these facts are now printed.

Size of Classes

In almost all colleges that report the conditions of instruction in this particular, there is an enormous variability in the size of the groups taught by a single teacher in undergraduate courses. Within the same institution the number will commonly range from three or even fewer to a number equal to a fifth of the entire student body. The facts in this regard have been reported, though not every year, and not without many ambiguities, by Boston University, Bowdoin, Brown, Bryn Mawr, University of California, Harvard, Johns Hopkins, Stanford, Oberlin, Radcliffe, University of Texas, Tufts, Western Reserve,